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Encoder Instructions

K780 Zero
Speed
INACTIVE DESIGN
Contact Help Desk

The K780 is a zero-speed pulse generator designed for use with digital instruments, such as Avtron's Digital Length Indicator. For each revolution of its shaft, the K780 supplies a constant number of pulse signals, regardless of shaft speed. Speed range is zero to 5,000 RPM, and maximum output frequency is 1,000 pulses per second. Application requirements determine the number of pulses per revolution (between one and twenty-two, inclusive). Only a small amount of power (12VDC \pm 10% at 12MA) supplied to the pickups through the external connectors is required to operate the K780. Two separate outputs provide for direction sensing by the use of two rotor discs identical except displaced rotationally, or two different pulse rates by the use of rotor discs producing different pulses per revolution.

I. INSTALLATION

Remove the condensate drain plug located on the bottom of the housing before mounting the Pulse Generator. Note: If the Pulse Generator is to be mounted in a position other than the normal, feetdown position, do not remove the drain plug. Use 1/4 inch hardware in the four holes provided in the Pulse Generator feet for mounting.

The Pulse Generator should be driven by a positive drive rather than a friction drive. The following means of driving the Pulse Generator may be used when installed in accordance with the coupling manufacturer's recommendation: Direct Coupling, Timing Belt and Pulleys, Chain and Sprockets, Gears. If a direct drive is used, use a flexible coupling and align the shafts as accurately as possible. (Misalignment should not exceed 0.010 inches). The Pulse Generator should not be subjected to any axial thrust. Overhung loads should also be minimized. Installations using timing belts and pulleys should have just enough belt tension to insure proper engagement of teeth. Excessive tension will shorten belt and bearing service life.

CAUTION

Do not drive or force couplings or pulleys onto the shaft of the unit, otherwise damage to the bearing may result. Refer to coupling manufacturer's instructions for proper installation procedure. Allow clearance between the shaft ends of the hubs of the flexible coupling as specified by the coupling manufacturer, to permit thermal expansion of the shaft in operation.

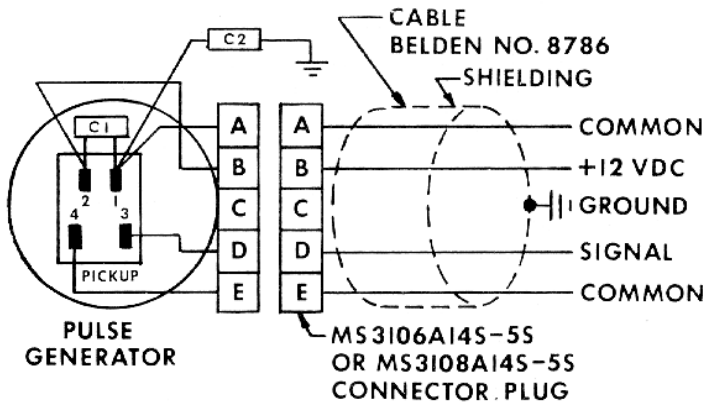
For electrical connection of pickups for Model K780 see the wiring diagram at the end of these instructions.

II. TROUBLE SHOOTING & SERVICE

- A. Avtron maintains a pulse generator service program. The K780 may be returned to Avtron for service at cost of parts plus a nominal charge for labor.
- B. If adequate facilities are available, the user can service the K780 by following these instructions.
- C. Whenever Loctite is specified here, use Type H Loctite.
- D. If the electrical operation of the K780 is suspected of being faulty, proceed with troubleshooting of the pickup unit as follows:
 1. Observe the output at connector terminals "D" and "E" while slowly turning the shaft. Twelve volts DC, \pm 10%, should be supplied to terminals "A" and "B". Refer to the wiring diagram for polarity. When a slot in the rotor disc is in the slot of the pickup, output should be +5.75 volts. Output should be zero when only solid portions of the disc are in the pickup. The pickup and capacitors should be replaced if maximum output drops below 4.0 volts DC.
 2. To replace the pickup, first remove the side cover plate ("MS" connector). Remove the two screws holding the pickup bracket to the housing. Remove the pickup and its bracket.
 3. Remove the two screws holding the pickup in its bracket.
 4. Unsolder the leads from the pickup being replaced.
 5. Connect the leads from the K780 connector and the capacitors to the new pickup in accordance with the wiring diagram on this sheet using rosin-core solder and a soldering iron rated 50 watts or less.
 6. Mount the new pickup in its bracket, using Loctite on the mounting screw threads.
 7. Install the pickup in the K780 by means of its bracket. Use Loctite in the mounting screws, but do not tighten them until the pickup is properly positioned as instructed in the next step. Proceed with the next step before the Loctite hardens (2-4 hours).
 8. Position the pickup unit so that the rotor disc is centered in the slot of the pickup. When centered properly, there will be 0.050 inch free space on each side of the disc in the pickup slot. Tighten the screws holding the pickup unit bracket to the K780.
 9. Re-install the cover, using Loctite on the mounting screws.

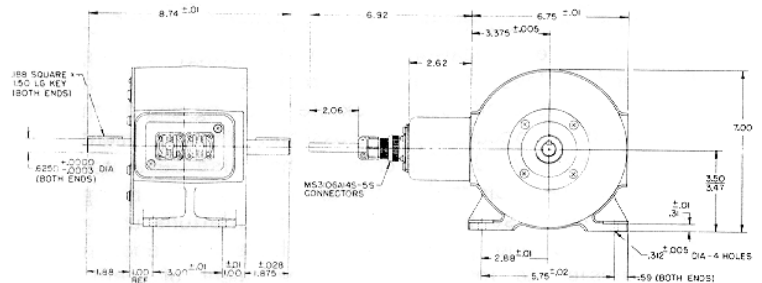
E. Bearing and Rotor Disc

1. The pulse generator bearing and shaft assembly is sealed and permanently lubricated. Inspection and replacement schedule should be the same as for other sealed bearing equipment in use at the same location.
2. The bearing and shaft assembly should be replaced when worn or rough.
3. The rotor disc should be replaced if it is damaged.
4. If adequate facilities are available, the user can repair the K780 or replace parts by carefully following this procedure:
 - a. Remove pickup units (with bracket). (See Section II.D.2).
 - b. Remove back cover & bearing support.
 - c. Remove rotor assembly by pushing on the outer race of bearing from shaft extension side of Pulse Generator. Be careful not to bend the rotor disc.
 - d. Remove the three pan head screws holding the disc to its support, then remove the disc if replacement is necessary.
 - e. Press the shaft from the bearing by applying support to the bearing inner race.
 - f. Press the new bearing on the shaft assembly by applying pressure to the inner race, until the bearing is flush with the shoulder.



**WIRING DIAGRAM FOR PICKUP
TYPICAL EACH OUTPUT**

- NOTE:**
- For a K780 with two different pulse rates: (a) The disc with the higher PPR must be mounted over the short extension of the shaft. (b) The connector box must be mounted so the PPR labels correspond to the discs (higher PPR toward the nameplate end of the (K780)).
- g. Assemble the two discs so that their mounting holes metal stamped "X" both face the short end of the shaft and are assembled with pan head screws into a common tapped hole in the disc support. These and the two remaining screws on each disc shall be assembled with Loctite.
 - h. Replace shaft seals, if necessary, by pressing out those damaged and pressing in replacements so that the seal part number face is flush with bearing retainer face opposite the bearing.
 - i. After adding a small amount of moly-lith grease to the inside of each seal, re-install the rotor assembly with the long end toward the housing cavity.
 - j. Replace end cover, bearing retainer and load spring assembly so that the load spring fingers face the bearing outer face. Use Loctite and install the 4 pan head screws and nylon washers.
 - k. Re-install the pickups per Section II.D.7.



PART NO.	DESCRIPTION	RECM'D. SPARES
B10321	Shaft	1
403317	Bearing	2
B10319	Bearing Retainer	1
473003	Load Spring Bearing	2
*	Rotor Disc	
471805	Seal, Shaft	2
372007	Pickup Unit	2
241058	Capacitor (C1), .22 uf, ±20%, 25 WVDC Sprague	4
B10327	Gasket, Connector Box Cover	
MS3102A14S-5P	Connector, Receptacle (on K780)	1
471751	Gasket, Connector	
MS3106A14S-5S	Connector, Plug, Straight (for cable)	1
MS3108A14S-5S	Connector, Plug, Right Angle (for cable)	

* Order by supplying pulse generator part number to factory